

IN THE CLAIMS

1 1. (Currently Amended) A method for designing a system on a target device utilizing
2 programmable logic devices (PLDs) with an electronic automation design tool (EDA),
3 comprising:
4 having the EDA tool determine a first location on the PLD to place a user defined logic
5 ~~region~~generating options for utilizing resources on the PLDs in response to user specified
6 constraints for placement of the user defined logic region; and
7 having the EDA tool determine a second location to place the user defined logic region,
8 wherein the second location is determined ~~refining the options for utilizing the resources on the~~
9 ~~PLDs where the options are~~ independent of the user specified constraints for placement.

1 2. (Currently Amended) The method of Claim 1, wherein having the EDA tool
2 determine the second location~~refining the options for utilizing the resources~~ is performed in
3 response to the first location~~options~~ not satisfying design parameters.

1 3. (Currently Amended) The method of Claim 1, wherein having the EDA tool
2 determine the second location~~refining the options for utilizing the resources~~ is performed in
3 response to the first location~~options~~ not satisfying the user specified constraints.

1 4. (Currently Amended) The method of Claim 1, wherein having the EDA tool
2 determine the second location~~refining the options for utilizing the resources~~ is performed in
3 response to having a threshold number of options generated.

1 5. (Currently Amended) The method of Claim 1, wherein having the EDA tool
2 determine the second location~~refining the options for utilizing the resources~~ is performed in
3 response to a triggering event.

1 6. (Currently Amended) The method of Claim 1, further comprising~~wherein generating~~
2 ~~options for utilizing the resources on the target device comprises~~ determining positions~~locations~~
3 to place components within user-defined logic regions on the target device.

1 7. (Currently Amended) The method of Claim 6, wherein determining positions to place
2 the components is an iterative procedure that includes:
3 selecting positions~~locations~~;
4 evaluating the positions~~locations~~ with a cost function; and
5 accepting the positions~~locations~~ if the cost function yields a desired value.

1 8. (Currently Amended) The method of Claim 6, wherein determining the
2 positions~~refining the options for utilizing the resources on the target device independent of the~~
3 ~~user specified constraints~~ comprises ~~determining locations to place the components on the target~~
4 ~~device by~~ removing constraints associated with the user-defined logic regions.

1 9. (Currently Amended) The method of Claim 1, further comprising~~wherein generating~~
2 ~~options for utilizing the resources on the target device comprises~~ determining routing resources
3 to allocate to user specified signals on the target device in response to user specified routing
4 constraints.

1 10. (Original) The method of Claim 9, wherein determining routing resources is an
2 iterative procedure that includes:
3 selecting routing resources;
4 determining whether routing resource selections satisfy the user specified routing
5 constraints; and

1 re-selecting routing resources if the routing resource selections do not satisfy the user
2 specified routing constraints.

1 11. (Currently Amended) The method of Claim 9, wherein re-selecting the routing
2 resources refining the options for utilizing the resources on the PLD independent of the user
3 specified constraints comprises determining routing resources to allocate to the user specified
4 signals on the PLD by removing the user specified routing constraints.

1 12. (Currently Amended) A method for positioning components of a system onto a
2 target device utilizing programmable logic devices (PLDs) using an electronic design automation
3 tool, comprising:

4 having the EDA tool determine a first location on the PLD to place a user defined logic
5 region in response to user specified constraints for placement of the user defined logic region;

6 determining whether the user specified constraint is a soft constraint in response to the
7 system not satisfying timing; and

8 having the EDA tool determine a second location to place the user defined logic region,
9 wherein the second location is determined independent of the user specified constraints for
10 placement if the user specified constraint is a soft constraint.

11 ~~determining possible locations to place a user defined logic region on a target device;~~

12 ~~determining possible locations to place a component in response to constraints associated~~
13 ~~with the user defined logic region; and~~

14 ~~determining possible locations to move the component from the possible locations to~~
15 ~~place the component where the possible locations to move the component are independent of the~~
16 ~~constraints associated with the user defined logic region.~~

1 13. (Currently Amended) The method of Claim 12, wherein determining the
2 ~~first possible~~ locations to place the user defined logic region comprises:
3 assigning an initial location for the user defined logic region;
4 moving the user defined logic region to a new location; and
5 evaluating a cost function associated with the user defined logic region in the new
6 location.

1 14. (Original) The method of Claim 13, wherein evaluating the cost function comprises:
2 determining a timing of the system associated with the user defined logic region in the
3 new location; and
4 determining routing resources requirements associated with the user defined logic region
5 in the new location.

1 15. (Currently Amended) The method of Claim 12, ~~further comprising wherein~~
2 determining possible locations to place ~~the component in the user defined logic region~~
3 comprises:
4 assigning an initial location for the component in the user defined logic region; and
5 evaluating a cost function as the user defined logic region and the component are moved.

1 16. (Currently Amended) The method of Claim 15, ~~further comprising wherein~~
2 determining possible locations to move the component from the possible locations to place the
3 component independent of the constraints associated with the user defined logic region-is
4 ~~performed in response to the possible locations to place the user defined logic region and the~~
5 ~~component not satisfying design parameters.~~

1 17. (Currently Amended) The method of Claim 162, wherein determining possible
2 locations to move the component ~~from the possible locations to place the component independent~~
3 ~~of the constraints associated with the user defined logic region~~ is performed in response to the
4 possible locations to ~~place the user defined logic region and the component~~ not satisfying user
5 specified constraints.

1 18. (Currently Amended) The method of Claim 162, wherein determining possible
2 locations to move the component ~~from the possible locations to place the component independent~~
3 ~~of the constraints associated with the user defined logic region~~ is performed in response to
4 having a threshold number of possible locations determined.

1 19. (Currently Amended) A method for designing a system on programmable logic
2 devices (PLDs) using an electronic design automation (EDA) tool, comprising:
3 having the EDA tool determining routing strategies for routing signals on the PLDs in
4 response to user specified routing constraints that pertain to categories of routing resources to
5 use; and
6 having the EDA tool determining additional routing strategies for routing the signals on
7 the PLDs where the additional routing strategies are independent of the user specified routing
8 constraints.

1 20. (Original) The method of Claim 19, wherein determining routing strategies for
2 routing the signals on the PLDs in response to user specified routing constraints comprises:
3 selecting routing resources for a user specified signal on the PLDs in response to the user
4 specified routing constraints; and
5 selecting routing resources for a non-user specified signal on the PLDs without utilizing
6 the user specified routing constraints.

1 21. (Original) The method of Claim 19, wherein determining additional routing
2 strategies for routing the signals comprises selecting routing resources for the user specified
3 signal on the PLDs independent of the user specified routing constraints.

1 22. (Original) The method of Claim 19, wherein determining additional routing
2 strategies for routing the signals is performed in response to the routing strategies not satisfying
3 user specified routing constraints.

1 23. (Original) The method of Claim 19, wherein determining additional routing
2 strategies for routing the signals is performed in response to the routing strategies not satisfying
3 design parameters.

1 24. (Original) The method of Claim 19, wherein determining additional routing
2 strategies for routing the signals is performed in response to a threshold number of routing
3 strategies being determined.

1 25. (Currently Amended) A machine-readable medium having stored thereon sequences
2 of instructions, the sequences of instructions including instructions which, when executed by a
3 processor, causes the processor to perform:
4 determining a first location on a programmable logic device (PLD) to place a user
5 defined logic region~~generating options for utilizing resources on programmable logic devices~~
6 ~~(PLDs)~~ in response to user specified constraints for placement of the user defined logic region;
7 and

8 determining a second location to place the user defined logic region wherein the second
9 location is determined~~refining the options for utilizing the resources on the PLD where the~~
10 ~~options are~~ independent of the user specified constraints for placement.

1 26. (Currently Amended) The machine-readable medium of Claim 25, wherein
2 determining the second location~~refining the options for utilizing the resources~~ is performed in
3 response to the first location~~options~~ not satisfying design parameters.

1 27. (Currently Amended) The machine-readable medium of Claim 25, wherein
2 determining the second location~~refining the options for utilizing the resources~~ is performed in
3 response to the first location~~options~~ not satisfying the user specified constraints.

1 28. (Currently Amended) The machine-readable medium of Claim 25, wherein
2 determining the second location~~refining the options for utilizing the resources~~ is performed in
3 response to having a threshold number of first locations determined~~options generated~~.

1 29. (Currently Amended) The machine-readable medium of Claim 25, wherein
2 determining the second location~~refining the options for utilizing the resources~~ is performed in
3 response to a triggering event.

1 30. (Currently Amended) The machine-readable medium of Claim 25, further
2 comprising~~wherein generating options for utilizing the resources on the target device comprises~~
3 determining locations to place components within user-defined logic regions on the target device.

1 31. (Currently Amended) The machine-readable medium of Claim 30, further
2 comprising~~wherein refining the options for utilizing the resources on the target device by~~

3 ~~ignoring the user specified constraints comprises~~ determining locations to place the components
4 on the target device by removing constraints associated with the user-defined logic regions.

1 32. (Currently Amended) The machine-readable medium of Claim 25, further
2 comprising~~wherein generating options for utilizing the resources on the target device comprises~~
3 determining routing resources to allocate to user specified signals on the target device in
4 response to user specified routing constraints.

1 33. (Currently Amended) The machine-readable medium of Claim 32, further
2 comprising~~wherein refining the options for utilizing the resources on the PLD by ignoring the~~
3 ~~user specified constraints comprises determining routing resources to allocate to the user~~
4 ~~specified signals on the PLD by removing the user specified routing constraints.~~